



KENYA METHODIST UNIVERSITY

END OF 1ST TRIMESTER 2009 EXAMINATIONS

FACULTY : ARTS AND SCIENCES
DEPARTMENT : COMPUTER INFORMATION SYSTEMS
UNIT CODE : MATH 130
UNIT TITLE : BASIC STATISTICS
TIME : 2 HOURS

Instructions:

- Answer question ONE (compulsory) and any other TWO questions.

Question 1 (30 marks)

a) Find the given products:

i) $(3x - 5)(2x + 1)$

ii) $[(x-3) + 4x]^2$ (4 mks)

b) Solve the expressions:

i) $(b^3c)^2 \cdot b^7 \cdot c^4$ (2 mks)

ii) $\frac{x^4 \cdot z}{(xz)^2}$ (2 mks)

c) Solve the linear equations:

i) $8(x+2) - 3(2x+1) = 3(x+5)$ (2 mks)

ii) $\frac{3x-2}{2x+1} = \frac{6x-9}{4x+3}$ (3 mks)

d) Solve the following simultaneous equation by elimination method:

$$x - 2y = 4$$

$$2x + y = 3$$

(3 mks)

e) i) Differentiate between qualitative and quantitative data. (2 mks)

ii) State 3 factors that affect the choice of the method of survey. (3 mks)

f) for the following frequency distribution

Marks	0-10	20-20	20-30	30-40	40-50	50-60	60-70
No. of Students	6	5	8	15	7	6	3

Calculate:

- i) Mean (3 mks)
- ii) Median (3 mks)
- iii) Standard deviation (3 mks)

Question 2 (20 marks)

a) Solve the inequalities:

i) $2x-6 \leq 4x - 7$ (3 mks)

ii) $-4 < \frac{2x-3}{3} < 4$ (3 mks)

b) The sum of two integers is 126. If one of the integers is five times the other, what are the integers? (3 mks)

c) The following is the distribution of weights of 140 first year students at KEMU.

Weight (pounds)	80-89	90-99	100-109	110-119	120-129	130-139	140-149
Frequency	4	23	49	38	17	6	3

- i) Draw a histogram and ogive.
- ii) Using diagrams of (i) above, find the mode and median.
- iii) Calculate the mean, mode and median. (11 mks)

Question 3 (20 marks)

a) Given the following functions:

$$f(x) = 2x^2 + 2x + 3$$

$$g(x) = -x^2 + 4x + 1$$

Find the following:

- i) $f(-1)$
- ii) $g(2)$
- iii) $f(-1) + g(2)$ (6 mks)

- b) The following data shows the distribution of members age of Men's fellowship in a certain church in Nairobi in the year 2001.

<i>Age (yrs)</i>	30-40	40-50	50-60	60-70	70-80	80-90	90-100
<i>No. of Worshippers</i>	1	4	14	20	22	12	1

Calculate:

- i) The mean age
ii) The standard deviation (14 mks)

Question 4 (20 marks)

- a) Give 3 ways of sampling.
b) Give the 4 bases of classification of data.
c) Given the data below:

<i>X</i>	34	39	45	29	54	44	36	47
<i>Y</i>	38	44	46	25	62	42	30	51

- i) Fit the least squares regression line, $y = \beta_0 + \beta_1x$ (7 mks)
ii) Calculate the value of y when $x = 40$. (2 mks)
- d) A poll of 20 voters is taken in a large city. The purpose is to determine x, the number in favor of a certain candidate for mayor. Suppose that 60% of all city voters favor this candidate. Find the:
i) Mean and standard deviation.
ii) Probability that x equals 11. (4 mks)